NAIC-ID(RS)T-0836-94

NATIONAL AIR INTELLIGENCE CENTER

SUCCESSFUL DEVELOPMENT OF FIRST-GENERATION LASER DEVICE; MARKING CHINA'S OPTOELECTRONIC TECHNOLOGY AT WORLD CLASS LEVEL

HUMAN TRANSLATION

NAIC-ID(RS)T-0836-94 18 April 1995

MICROFICHE NR: 95C000223

SUCCESSFUL DEVELOPMENT OF FIRST-GENERATION LASER DEVICE; MARKING CHINA'S OPTOELECTRONIC TECHNOLOGY AT WORLD CLASS LEVEL

English pages: 2

Source: Keji Ribao, Nr. 228, 1991; pp. 9

Country of origin: China
Translated by: Leo Kanner Associates
F33657-88-D-2188
Requester: NAIC/TATA/J.M. Finley
Approved for public release; Distribution unlimited.

PREPARED BY:

TRANSLATION SERVICES
NATIONAL AIR INTELLIGENCE CENTER
WPAFB, OHIO

GRAPHICS DISCLAIMER

All figures, graphics, tables, equations, etc. merged into this translation were extracted from the best quality copy available.

SUCCESSFUL DEVELOPMENT OF FIRST-GENERATION LASER DEVICE; MARKING CHINA'S OPTOELECTRONIC TECHNOLOGY AT WORLD CLASS LEVEL

As reported by correspondent Fan Jian in a 27 February dispatch in Keji Ribao [Science and Technology Daily] from Beijing, in a 1990 global newsmaking event Bell Laboratories (United States) developed the world's first optical information processor. Its core device is a self-excited electrooptical effect apparatus array of symmetric operation. After being developed in the United States, this high-technology device was successfully developed by China's scientists, thus marking the fact that China's optoelectronic technology is among the most advanced in the world.

Referred to as an ideal optical source with a semiconductor laser device, the quantum well laser device points to the direction of development in which the world's optotechnology is headed. This is also an important milestone in evaluating a nation's development criterion for optoelectronic devices. On this occasion, a gallium arsenide/gallium aluminum arsenide superlattice quantum well self-excited electrooptical effect optical bistability device; a high repetition frequency, picosecond gallium aluminum arsenide/gallium arsenide quantum well laser device; and a "low-threshold value gallium aluminum arsenide/gallium arsenide quantum well" were successfully developed at the Institute of Semiconductors of the Chinese Academy of Sciences. These three devices can have important

functions in optical communications, optical information processing, optical computations, as well as in military optoelectronic technology.

The "self-excited electrooptical effect device" is a topic in leading edge high-technology research, which is being strongly emphasized internationally. Such devices have the features of low power consumption, high speed, and easy integration, with important positions in digital information processing and optical computation technology. As developed by the Institute of Semiconductors of the Chinese Academy of Sciences, using materials and apparatus technology available in China, this laser device has the following performance data: throughput energy consumption, 5 femtojoules per square micrometer; operating wavelength 100 angstroms, lowest bistability voltage 2V, symmetrical self-excited electrooptical effect; and the functions of an R-S optical trigger. This is an important breakthrough in developing China's superlattice quantum well electronic devices. For the "high-repetition frequency quantum well laser device," its high temperature stability is 464K; the highest excitation temperature is more than 152°C; wavelength, 0.85 micrometer; modulation frequency 1-6 gigaHertz; minimum pulse duration, 15 picometers; and maximum pulse peak power, 240 milliwatts.

In the view of the well-known scientist, Ye Peida, an academic member of the Chinese Academy of Sciences, this important achievement of the overall completion of the key mission of project "863" should be applied as soon as possible to China's optical communications, optical information processing, digital optical computation technology, and other related realms.

DISTRIBUTION LIST

DISTRIBUTION DIRECT TO RECIPIENT

ORGANIZATION	MICROFICHE
B085 DIA/RTS-2FI	1
C509 BALLOC509 BALLISTIC RES LAB	1
C510 R&T LABS/AVEADCOM	1
C513 ARRADCOM	1
C535 AVRADCOM/TSARCOM	1
C539 TRASANA	1
Q592 FSTC	4
Q619 MSIC REDSTONE	1
Q008 NTIC	1
Q043 AFMIC-IS	1
E051 HQ USAF/INET	1
E404 AEDC/DOF	1
E408 AFWL	1
E410 AFDIC/IN	1
E429 SD/IND	1
P005 DOE/ISA/DDI	1
P050 CIA/OCR/ADD/SD	2
1051 AFIT/LDE	1
P090 NSA/CDB	1
2206 FSL	1

Microfiche Nbr: FTD95C000223
NAIC-ID(RS)T-0836-94